The Department of Energy's (DOE's) Operational Readiness Review Process

Ensuring High-Hazard Facilities Are Started Up Safely

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Outline

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Introduction - Purpose

- The ORR process establishes the requirements for:
  - Startup of new nuclear facilities, and
  - Restart of existing facilities that have been shut down.
- The purpose of the ORR process is to provide an approach to reviewing the safety of operations that is:
  - Independent
  - Systematic
  - Disciplined
  - Performance-based
  - Documented

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Introduction – Purpose (continued)

- The goal of the process is to demonstrate that it is safe to start the applicable facility or activity—i.e., not a programmatic review
- These readiness reviews:
  - Are not intended to be tools of line management to achieve readiness,
  - Nor are they intended to re-evaluate previously-approved design or safety analyses; rather they are
  - Intended to provide an independent confirmation of readiness to start or restart operations.

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Introduction - History

- After the nuclear accident at Chernobyl, the DOE commissioned several independent reviews of its nuclear operations—these reviews resulted in the shutdown of a substantial portion of the nuclear facility complex in the 1989 – 1990 timeframe.
- DOE and the congressionally-mandated, nuclear safety oversight agency—the Defense Nuclear Facilities Safety Board (DNFSB)—determined that a formal safety review process needed to be put in-place… the concept was borrowed from 'standard practice' in the commercial nuclear industry and the Naval Nuclear Propulsion Program & named the ORR
- DOE is committed to developing a DOE requirements document, known as an "Order", and guidance document, or "Standard"
- The utility of the process has led to DOE expanding it's use to non-Defense nuclear facilities and to other high-hazard facilities

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What is Reviewed?

- Hazards identification and implementation of associated controls
- Whether the equipment and systems can be relied upon to perform their safety-related functions
- Processes and procedures are in-place to perform operations needed to assure safety
- Personnel have been adequately trained to perform their responsibilities
- Management mechanisms and systems, along with infrastructure programs are implemented to support safe operations

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Major ORR Attributes

- Authorization Authority – the level of Line Manager that must approve the startup or restart… can be up to, and including, the Secretary of Energy
- Grading/Tailoring – both of these terms are used to describe the fact that the comprehensiveness and depth of the review is adjusted, based on the safety risk and several other factors
  - Operational Readiness Review (ORR) or Readiness Assessment (RA)
  - Breadth
  - Depth
- Independence – the review team "must not include as senior members… individuals from offices assigned direct line management responsibility for the work being review."

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Major ORR Attributes (continued)

- Standards-Based – the review criteria are developed and approved prior to the review and are based on DOE Orders and standards.
- Performance-Based – strong emphasis is placed on in-field evolutions, interviews, table-top demonstrations, etc., as opposed to "paper only."
- Process – it's a *process* and not simply a review; the process involves tailoring the review to the project being assessed and graded levels of approval.

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The ORR Process

- Startup Notification Report – normally submitted by the operating contractor one year prior to a planned startup, addresses:
  - Brief description of the activity or facility & reason for non-operation (if a restart);
  - Schedule for restart/startup and proposed type of readiness review;
  - Risk-based justification for grading of readiness review; and
  - Proposed approval authority (if not *dictated* by DOE Order 425.1).
- Plan of Action (POA) – developed by both the DOE and the facility operating contractor, they describe:
  - 4 – 6 months prior to the scheduled review (contractor)
  - Pre-requisites for initiating the review/operations & notional schedule for review
  - Which of the 15 "core requirements" are applicable to the review, with justification for those that are not to be included—known as the "breadth of the review"
  - Review Team Leader
  - After approval of the contractor POA, DOE will develop its POA (executed in parallel).

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The ORR Process (continued)

- Implementation Plan (IP) – developed by the approved Review Team Leader.
  - Review team make-up
  - Structure to address the "breadth" of the review,
  - Depth of review and review approach for each criteria,
  - Schedule for site visit and review-specific training, and
  - Outlines reporting expectations.
- ORR/RA Team Site Visit – intended to be a fact-finding and familiarization evolution; can result in revisions to the details of the IP, often involves:
  - Review Team Leader briefing on the scope and methodology of the review
  - Line Management - details of activity under review, facility walk-through
  - Review Logistics
- Line Management Determination of Readiness – appropriate line management must formally document its readiness to start operations; certifying completion of all pre-requisites, or discusses outstanding issues and the corrective action plans.

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The ORR Process (continued)

- Accomplish Review – the conduct of a review normally involves the following:
  - Formal In-Brief
  - Daily Team Meeting and regular update meetings between the Review Team Leader and Line Management (no surprises!);
  - Issuance of draft observations as they are finalized; and
  - Detailed out-brief with Line Management that addresses the pre-start and post-start findings (non-compliances) of the review.
- Final Report
  - Executive Summary that discusses findings and provides the Review Teams recommendation whether the activity/facility can be safely started up.
  - Summary results of the review, organized in accordance with the structure of the report laid out in the IP
  - Detailed assessment results provided in accordance with standard format and content guidance in the DOE Standard.

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"Some" Top-Level Lessons Learned

- Work the Process – understand the function of each step, the step-wise manner in which the path forward is developed, reviewed and approved.
- Team Leader Selection – leader needs to be both:
  - *Fully-qualified*, that is, generally understood to technically understand the activity being reviewed and significant, previous readiness review experience; along with,
  - *Appropriately available*, the Leader has substantial responsibilities over the life of the review, the authorizing official must be convinced that they have sufficient time to perform this function.
- Team Member Training – needs to address site/activity-specific knowledge needs, along with assessment skills and tools—lack of either one will negatively impact the quality of the review.

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"Some" Top-Level Lessons Learned (cont.)

- Communications – both formal and informal, between the Review Team Leader and Line Management are vital:
  - Formal documents, i.e., the IP and POA should clearly describe the "breadth and depth" of the review;
  - Clear, formal pre-review document and interview requests also help all concerned to understand the scope of the review;
  - Regular conversations with Line Management are needed to keep appraised of schedule progress/changes; and
  - Keep the Authorizing Official informed and involved.
- Not a Line Management "Tool" – the readiness review is an independent, performance-based, sampling review of the adequacy of management's preparations for safe operations—it pre-supposes that line management has completed its verification and validation processes.

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"Some" Top-Level Lessons Learned (cont.)

- Requirements and Standards – keeping review and line management personnel informed that authoritative DOE requirements underpin the review approach will:
  - Help to focus conversation on "facts"
  - Differentiate between "findings" and "advice"
- Additional, detailed lessons learned available at: www.eh.doe.gov/orr (registration required)

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Questions

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